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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/680,236 | 10/08/2003 | Albert W. Patterson | 740859-125 | 5839 |
| 22204 | 7590 | 09/16/2004 | EXAMINER | |
| NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128 | | | TRIEU, THAI BA | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3748 | |

DATE MAILED: 09/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/680,236

Applicant(s)

PATTERSON, ALBERT W.

Examiner

Thai-Ba Trieu

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 2 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☒ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 and 13 is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
- Paper No(s)/Mail Date 12/18/03.
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The Preliminary Amendments filed on December 18, 2003 and June 03, 2004 are acknowledged. Claims 5-11 and 13 were amended, and claim 12 was cancelled.

This application is in condition for allowance except for the following formal matters:

1. IN THE DRAWINGS:

1. The reference character **"48"** has been used to designate both **"annular piston seal"** and **"slots of the rotor disk 12"** (See Figure 1). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

2. The reference character **"42"** has been used to designate both **"ear of the vane"** and **"sides of the vane"** (See Figure 5). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet

Art Unit: 3748

should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

3. The reference character **"18"** has been used to designate both **"end wall 18"** (See Figure 1; and Page 4, Paragraph [0021], line 3) and **"interior end wall 18"** (See Figure 5; and Page 7, Paragraph [0029], line 6). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

4. The reference characters **"50"** and **"52"** have both been used to designate **"compartments"** (See Figure 3). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to

avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

5. The drawings include the following reference character(s) not mentioned in the description: **"52"** (See Figure 3 and 6). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

2. IN THE SPECIFICATION:

1. Applicant is suggested to use -- **rotary piston device 2** -- instead of "**rotary piston(s) 2**" (See Page 4, Paragraph [0020], line 1), or "**device 2**" (See Page 4, Paragraph [0020], line 2; Page 8, Paragraph [0031], line 1), or "**devices 2**" (See Page 8, Paragraph [0034], line 1) through out the specification to maintain the consistency of the whole specification.

2. On Page 5, Paragraph [0023], line 3, -- **(14)** -- should be inserted after "**housing**".

3. Applicant is suggested to use "**external vane seal 56**" (See Page 6, Paragraph [0027], line 6) instead of an alternative "**seal 56**" (See Page 6, Paragraph [0027], lines 7-8 and 16; Page 7, Paragraph [0028], lines 1-3) through out the specification to maintain the consistency of the whole specification.

4. For the element "**20**", applicant should select either "**interior side wall 20**" (See Page 4, Paragraph [0021], line 3; Page 5, Paragraph [0022], line 4, and Paragraph [0023], line 3), or "**sidewall 20**" (See Page 4, Paragraph [0021], line 4) through out the specification to maintain the consistency of the whole specification.

5. On page 5, Paragraph [0022], line 5, "Portion 28" should be replaced by -- **The second portion 28** -- (for the consistency).

3. IN THE CLAIMS:

1. Claim 1 should be replaced by the following:

-- A rotary piston **device** comprising:

Art Unit: 3748

a shaft to rotate about a longitudinal axis;

a rotor centrally secured to the shaft, the rotor having a body with a cylindrical surface extending between space ends;

a rotor disk secured to the rotor at each end and secured at ~~[[its centre]]~~ a center of the rotor disks to the shaft (for correcting 112 second paragraph, since it is not clear that the terminology of "its" is used to reference to or to identify which elements such as the rotor of rotor disk);

a housing encasing the shaft, the rotor and the rotor disk within an internal cavity, the shaft extending outside of the housing, the housing having an interior end walls adjacent to the rotor disks and an interior sidewall, with fluid inlet and fluid outlet ports in the interior sidewall, a first portion of the interior sidewall of the housing being cylindrical and curved with a constant radius over an angle of about approximately 180^0 , ~~[[this]]~~ the first portion being spaced a constant distance from confronting portions of the cylindrical surface of the rotor, and a second portion of the interior sidewall of the housing extending between the extremities of the first portion of the interior sidewall ~~[[and being of]]~~ , and a curvature of the second portion having a greater radius than ~~[[that]]~~ a curvature of the first portion;

the cylindrical surface of the rotor being proximal to the interior sidewall of the housing at a point between the fluid inlet and fluid outlet

Art Unit: 3748

ports about midway on the second portion, the fluid inlet and fluid outlet ports being located in this second portion of the interior sidewall of the housing (for consistency of claims);

at least three ~~[[or more]]~~ equal spaced, radially oriented slots in the rotor longitudinally extending across ~~[[its]]~~ the cylindrical surface of the rotor body;

at least three ~~[[or more]]~~ similar vanes, each vane having internal and external edges extending between sides, each vane slidably seated in ~~[[a different]]~~ one of said slots, each vane movable radially in ~~[[its]]~~ the corresponding slot between an extended position with the external edge of the vane adjacent the interior sidewall of the housing, and a retracted position wherein the external edge of the vane does not extend beyond the cylindrical surface of the rotor, the vanes being spaced from the adjacent vanes about the rotor such that there is always at least one vane positioned between the fluid inlet and fluid outlet ports;

an ear extending beyond the external edge of each vane at each of ~~[[its]]~~ vane sides and a pin secured to each ear and extending inwardly towards the ~~[[vane's]]~~ other ear of the vane, the pin of each ear seated in one of a pair of races continuously extending in portion of the interior wall of the housing, the races circumscribing the shaft and formed so as to provide proper extending and retracting movement of the vanes as the

Art Unit: 3748

pins move along ~~[[them]]~~ the races ~~[[during rotation of]]~~ wherein/when/as the rotor rotates;

a plurality of slots in the rotor disks aligned with the rotor slots and slidably receiving the sides of the vanes and the corresponding ears;

the rotor disks, the housing, and the vanes constructed so that, during the operation of the ~~[[device]]~~ rotary piston, fluid entering the housing through the inlet port is carried by the rotor, ~~[[in]]~~ wherein each of compartments formed between adjacent vanes, the rotor surface, the rotor surface between ~~[[those]]~~ the vanes, the rotor disk and the corresponding portions of the end walls and the interior sidewall of the housing, until the adjacent vanes encompass the outlet port where the fluid is allowed to leave the housing.--

2. Claim 2 should be replaced by the following:

-- The rotary piston device according to claim 1, wherein the rotor is provided with four slots, ~~[[each slot having]]~~ and one of said vanes slidably seated within ~~[[it]]~~ each slot of the rotor --

3. Claim 3 should be replaced by the following:

-- The rotary piston device according to claim 1, wherein ~~[[one or more apertures are]]~~ at least one aperture is provided in each vane, said ~~[[apertures]]~~ at least one aperture extending from the external edge to

the internal edge of [[their corresponding vanes]] the corresponding vane--

4. Claim 4 should be replaced by the following:

-- The rotary piston device according to claim 3, wherein the external of said each vane is provided with [[a]] an external vane seal extending along [[that]] the external edge, from side to side of the vane, the external vane seal constructed so as to permit a fluid passage from [[a-chamber]] the compartment on one side of the vane to the bottom of the corresponding slot, below the vane, to assist in outward movement of the vane and holding the vane in extended position while restricting flow of the fluid from said compartment on the other side of the vane. -- (for consistency with specification, since the recitation of "**chamber**" is not disclosed in the specification)

5. Claim 5 should be replaced by the following:

-- The rotary piston device according to claim 4, wherein each external [[edge]] vane seal is movable in a pocket extending along the external edge of the corresponding vane, between the first and second portions on the end of the vane so as to provide the fluid passage [[of fluid]] through said at least one aperture of the corresponding vane [[aperture or apertures]] from one adjacent compartment when the external vane seal is in said first position and from the other adjacent

Art Unit: 3748

compartment when the external vane seal is in [[the]] said second position. -- (for consistency of the whole specification and claims)

6. Claim 6 should be replaced by the following:

-- The rotary piston device according to claim 4, wherein the external vane seal is made of brass. -- (for consistency)

7. Claim 7 should be replaced by the following:

-- The rotary piston device according to claim 1, wherein [[an aperture]] a series/a plurality of apertures through the rotor disk is provided in each quadrant between adjacent slots of the rotor disk, and fluid seals are provided on either side of each [[aperture]] of said apertures between the corresponding rotor disk and the corresponding interior end wall and the housing.--

8. Claim 8 should be replaced by the following:

-- The rotary piston device according to claim 7, wherein a reef valve is provided in each [[aperture]] of said apertures to assist in maintaining positive pressure between the corresponding rotor disk and the housing.--

9. Claim 9 should be replaced by the following:

-- The rotary piston device according to claim 7, wherein the seals are in the form of piston seals, whereby increased fluid pressure on the [[seal]] piston seals causes expansion of sides of the [[seal]] piston seals to enhance the resistance to the passage fluid past the [[seal]] piston seals.--
(for consistency with the specification)

10. Claim 10 should be replaced by the following:

-- The rotary piston device according to claim 7, wherein a [[fluid]] continuous seal is provided between an interior surface of each rotor disk and a portion of the interior sidewall of the housing in which the race provided, so as to assist in maintaining fluid pressure within the corresponding compartment.-- (for being incorporated with the specification. If applicant wants to use the recitation of "**fluid seal**", this recitation is required to be incorporated with the specification.)

11. Claim 13 should be corrected as being suggested in claims 1, 3, 5, and 7 above.

Conclusion

The IDS (PTO-1449) filed on December 18, 2002 has been considered. An initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Petersen (US Patent Number 2,728,330) discloses a rotary internal combustion engine.
- Martin (US Patent Number 3,431,861) discloses a rotary variable-discharge pump with radially displaceable vanes and reversible direction of drive.
- Kelly (US Patent Number 3,464,395) discloses a multiple piston vane rotary internal combustion engine.
- Kelly (US Patent Number 3,478,728) discloses a compound vane rotary internal combustion engine.
- Spyridakis (US Patent Number 3,514,237) discloses a fluid motion device.
- Bakos (US Patent Number 3,863,611) discloses a rotary engine.
- Eickmann (US Patent Number) discloses a vane seal means rotary vane machine.
- Sakamaki et al. (US Patent Number 4,958,995) discloses a vane pump with annular recesses to control vane extension.
- Kazempour rotary engine (US Patent Number 6,776,136) discloses an elliptical rotary engine.
- Garcia Rodriguez (Patent Number DE 26 28 539 A1) discloses a rotary motor.
- Zaar (Patent Number DE 297 20 052 U1) discloses a rotary internal combustion engine.
- Myo et al. (Patent Number GB 2 078 303 A) disclose a rotary internal combustion engine.

Prosecution on the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

A shortened statutory period for reply to this action is set to expire **TWO MONTHS** from the mailing date of this letter.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

However, the examiner's new telephone number (751) 272-4867 will become effective after the expected changeover date of November 22, 2004.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
September 14, 2004


Thai-Ba Trieu
Patent Examiner
Art Unit 3748